



Figure 4. Peak ebb currents (at the surface) through Block Island Sound, three hours after slack at The Race (from US Coast and Geodetic Survey, 1958). Current speeds reported in knots.

Near surface measurements (5-day record) obtained in north-central Block Island Sound ( $41^{\circ} 13.2'N$   $71^{\circ} 49.0'W$ ) showed ebb flow of 1.2 knots directed east-northeast ( $80^{\circ}$ ) and flood flow of 1.0 knots directed west. The same source also presented measurements obtained just west of Block Island ( $41^{\circ} 12.2'N$   $71^{\circ} 38.2'W$ ), in an area of weaker flow. Currents rotated clockwise over approximate 12-hour periods (the record was 60 hours in duration), with maximum speeds of 0.6 knots. These maximum speeds occurred when currents were northeastward.

These observations support the understanding that currents within Block Island Sound are primarily tidal and are focused within the main channels linking The Race to the continental shelf. Currents in the central region of the Sound, and west of Block Island, are relatively weaker. Surface currents are generally stronger than bottom flow. Topographic features steer the currents, with increasing control closer to frictional boundaries such as shorelines or the sea floor.

Evidence of a large-scale transient eddy was found from surface current observations. This eddy results perhaps from brief horizontal shear at the end of the flood tide phase. The onset of ebb tide is evidenced initially eastward out of Napeague Bay along the north shore of Montauk (Figure 5, NOPP/CODAR, 2001). However, the greater momentum of the northwestward flood tide through Block Island Channel requires some phase lag before reversing. This brief phase of the tide characterized by eastward flow at Montauk and northwestward flow within the Channel, sets up a